



**NASA Advanced
CNS Architectures and
System Technologies
(ACAST) Workshop**

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**SITA Oceanic CNS
Solutions**

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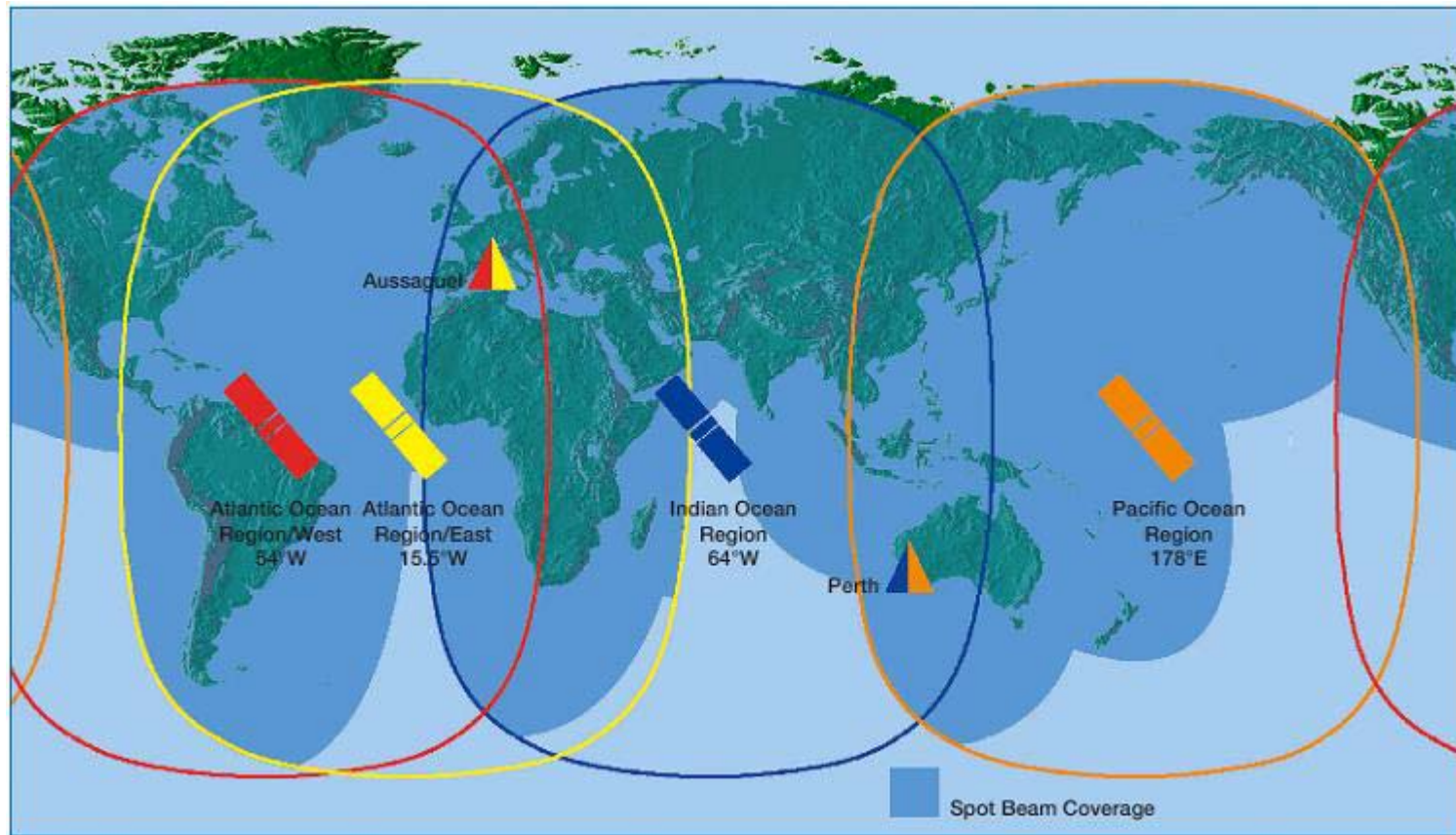
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Aeronautical Mobile Satellite Services (AMSS)

- **Services available via Inmarsat-3 Satellites**
 - **“Classic Service” (voice and data)**
 - **AMSS Data 2* (nominally 600 or 10,500 bps)**
 - Approximately 2000 air transport aircraft equipped to send Aircraft Communications, Addressing, and Reporting System (ACARS) datalink using AMSS-2
 - Only satellite service currently approved for ATS use-supports FANS-1/A and pre-FANS services
 - **AMSS Data-3(ATN subnetwork)**
 - **Swift64 (nominally 64 kbps)**
- **Services that will be available via Inmarsat-4 Satellites (To be available in 2006)**
 - Same as Inmarsat-3
 - **SwiftBroadband (formerly Aero-BGAN) (nominally 432 kbps)**
 - **Safety Services to become available around 2010**

Worldwide Satellite AIRCOM Coverage using Inmarsat-3



ATS Services Supported by AMSS Data-2

■ FANS-1/A

- Supports the aircraft with FANS-1/A avionics running the AFN, CPDLC, and ADS applications
- Over 20 implementations worldwide including FAA Anchorage, Oakland, and New York ARTCCs

■ Pre-FANS

- FIS: ATIS, TWIP
- Departure Clearance, Oceanic Clearance
- Available for locations worldwide

■ Centralized FMC Waypoint Reporting System (CFRS)

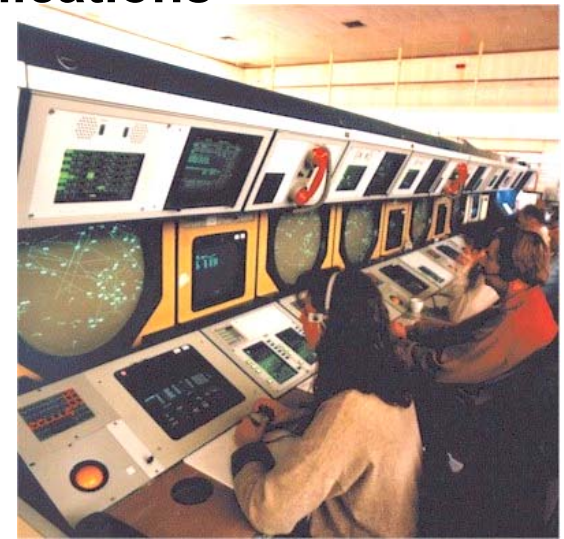
- Soon to be used operationally in the North Atlantic by NAV CANADA, NAV Portugal, and possibly others.

ATS Applications Requiring “Broadband” Capacity Links

- **To date, no ATS applications requiring “broadband” capacity links have been defined. However, flight information services such as graphical weather could potentially benefit from Swift64 and SwiftBroadband**
- **Airlines may be choosing to equip with the higher capacity links for airline operational control (AOC) applications**
- **NASA and Eurocontrol have projects in place to investigate various satellite services suitability for ATS.**

Satellite Cockpit Voice benefits

- **Cockpit voice in Oceanic and Remote regions**
 - Outside VHF coverage the voice communications alternatives are HF and satellite.
- **HF Voice drawbacks**
 - Interference, variability and delays
 - No Direct pilot/controller channel
- **Benefits of Satellite Voice**
 - Pilots talk directly to controllers
 - Enables complex communications
 - Easy management of low probability / high cost events (diversion = \$20,000 indirect cost / flight)
- **Air Traffic Service Providers in the North Atlantic, South Africa Air Traffic and Navigation Services, and possibly others investigating use of Satellite Voice**



Summary

- **Satellite Communications has an important role in CNS.**
- **AMSS Data-2 supports ATS applications and will likely be used for several years into the future.**
- **Higher capacity links such as Swift64 and SwiftBroadband are being evaluated.**
- **Benefits of Satellite Voice are being evaluated by Air Traffic Service Providers.**



**Thank you for
your attention**

**For further information
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